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(54) **GRAPEVINE PLANT NAMED ‘NICOLLET’**

(50) Latin Name: ***Vitis* hybrid**
Varietal Denomination: **Nicollet**

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USPC **Plt./205**

(58) **Field of Classification Search**
USPC Plt./156, 205
See application file for complete search history.

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(57) **ABSTRACT**

A grapevine plant botanically known as *Vitis* hybrid ‘Nicollet’, having a unique combination of hardiness, vigor, disease resistance, and grapes that produce high quality wine with intense tropical aromas and flavors with large clusters of grapes that are relatively easy to harvest and are beneficial to commercial production; the grapes having high sugars coupled with increased acidity, which can result in fruit forward wines with tropical flavors and aromas.

6 Drawing Sheets

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Botanical classification: *Vitis* hybrid.
Variety denomination: ‘NICOLLET’.

BACKGROUND OF THE INVENTION

Grapes are being grown commercially in non-traditional states like Minnesota despite the region’s mid-continental climate, which can yield exceptionally cold winters that create challenges for the emerging wine industry. At the same time, the cold climate in Minnesota creates opportunities for the production of wines with increased acidity, which can result in a more complex mouthfeel. Currently, the most promising areas in the state are in the Mississippi, Minnesota and St. Croix river valleys in the southern half of the state. These valleys were created in glacial times and have large hills surrounding them as well as gravelly or sandy soils well suited for grapes.

Currently, less than 100 wineries exist in Minnesota, extending from southern Minnesota to just south of the Canadian border. Many of these wineries produce non-grape wines from honey, rhubarb, raspberries, and the other fruit. However, several Minnesota wineries are currently managing substantial vineyard tracts. A few wineries have even received awards for wines produced by these vineyards at top international wine competitions.

Despite some success, grape growing in Minnesota is fraught with difficulties. Most European grape varieties that

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are grown in Minnesota, and even many “French-American hybrid” wine varieties, require protection if they are to survive the frigid winter temperatures—especially in northern Minnesota. This is usually done by removing vines from the trellises and bending them to the ground in early November, then covering the vine with soil or straw.

Although covering vines effectively insulates them from cold winter temperatures, there are a number of problems that make this practice less than satisfactory. Of primary concern is the greatly increased labor cost, which is generally prohibitive and makes it quite difficult for cold-climate vineyards to operate profitably. However, logistical challenges exist as well. For example, the trunks of the vine may break due to the fact that they become less pliable as they grow larger in diameter. If the vine does not break, fungi and bacteria may infiltrate the vine through small “stress cracks” in the trunk, causing disease. Rodents may also feed on the trunks and canes as they lay on the ground during the winter, further injuring the vine. If the vine survives the winter, great care must be taken to avoid damaging the buds when the vines are uncovered during the spring. Accordingly, for grapevines to be of high commercial value to vineyards in northern regions, it is important for varieties to be hardy enough to remain on the trellises throughout the winter months without removal and winter covering.

Fortunately, there exist good sources of tolerance to cold hardiness for breeding purposes, i.e. *Vitis riparia* and *Vitis*

labrusca. These hardy grapes have a flavor that is acceptable in table wines. However, they are generally too high in acid and too unproductive to use on their own.

Some of the hardiest known wine grape varieties, ‘Sabre-vois’ (not patented) (ES 2-1-9), and ‘Frontenac’ (not patented) (MN 1047), have demonstrated hardiness to at least –35 degrees F. (about –37.2 degrees C.) in central Minnesota. The ‘Chisago’ grape (U.S. Plant Pat. No. 19,246) and Nokomis grape (U.S. Plant Pat. No. 23,376) have been shown to be winter hardy to about –40 degrees F. (about –40 degrees C.). In central Minnesota, the present variety has proven that it is at least as winter hardy as these known varieties. The present variety also presents a wide variety of additional distinguishing characteristics including producing grapes with an intense tropical flavor, resistance to disease and pests, vigor, productivity, size of fruit, size of grape clusters and coloration, hereinafter set forth in detail. For example, the dimensions of ‘Nicollet’ berries along the longitudinal axis is 0.5132 inch (about 13 mm) to 0.75 inch (19.1 mm). The dimensions of ‘Nicollet’ berries along the transverse axis is 0.6 inch (15.24 mm) to 0.82 inch (about 21 mm). By comparison, the dimension of the berries along the longitudinal axis of the ‘Chisago’ and ‘Nokomis’ grapes are generally smaller at 0.4375 inch (about 11 mm) to 0.5 inch (12.7 mm) and 0.5 inch (12.7 mm) to 0.75 inch (about 19 mm) along the transverse axis. The weight of ‘Nicollet’ berries were observed to be 0.08 ounces (about 2.3 grams) to 0.19 ounces (about 5.4 grams). By comparison, the weight of the ‘Chisago’ and ‘Nokomis’ berries are known to be slightly lighter at 0.07 ounces (about 2 grams) to 0.14 ounces (about 4 grams). The ‘Nicollet’ vines are generally less susceptible to powdery mildew and downy mildew than Nokomis, and similar in general disease resistance to Chisago.

SUMMARY OF THE INVENTION

The present invention relates to a new and distinct cultivar of grapevine plant botanically known as *Vitis* hybrid ‘Nicollet’, referred to hereinafter by its cultivar name, ‘Nicollet’. The ‘Nicollet’ grapevine has a unique combination of hardiness, vigor, disease resistance, and grapes that produce high quality wine with intense tropical aromas and flavors not found in existing grape varieties known to the Inventors. Moreover, ‘Nicollet’ produces large clusters of grapes that are relatively easy to harvest and are beneficial to commercial production. Additionally, grapes produced from the ‘Nicollet’ vine have high sugars coupled with increased acidity, which can result in fruit forward wines with tropical flavors and aromas.

Fruit of ‘Nicollet’ can be fermented to produce white wine having an almost clear or slightly pale color with desirable aromas of pineapple, peach and mango. The wine lacks “foxy” aromas typically associated with *V. labrusca*. It also lacks herbaceous aromas that are commonly associated with *V. riparia*. The fruit at harvest is usually comparable in sugar and acidity to wines associated with *V. vinifera*.

When grown in east central Minnesota, the plants of ‘Nicollet’ are extremely vigorous and winter hardy to at least –40 degrees F. (–40 degrees C.). The vines are moderately resistant to herbicide injury and moderately susceptible to foliar phylloxera (*Daktulospahira vitifoliae*) damage. The disease black rot, caused by *Guignardia bidwellii*, has been observed sporadically and at low levels on the leaves, but not on the fruit. Downy mildew, caused by *Plasmopara*

viticola, has been observed at low levels on the foliage, but has not been seen on the fruit. Powdery mildew disease, caused by *Uncinula necator*, has been seen at low levels on the foliage, but not on the fruit.

‘Nicollet’ vines set a relatively heavy crop load from year to year that varies with pruning technique. The fruit are borne on tight, medium-sized clusters. The berries are relatively large in size and green in color. The berries have not been observed to split, even under wet conditions in the autumn.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying color photographs show characteristics of ‘Nicollet’ grown under typical field conditions in east central Minnesota. The photographs depict the color features as true as is reasonably possible.

FIG. 1. shows a close-up photo of a fruit cluster of ‘Nicollet’ in late September.

FIG. 2. shows a mature leaf, upper surface in late September.

FIG. 3. shows a mature leaf, lower surface in late September.

FIG. 4. shows a mature vine in late September.

FIG. 5 shows an alternative image of a mature vine in late September.

FIG. 6 shows a mature fruit cluster of ‘Nicollet’ alongside a mature leaf in late September.

DETAILED BOTANICAL DESCRIPTION

‘Nicollet’ was selected for its combination of good winter hardiness, vigor, grape size, grape flavor, disease resistance and overall suitability as a white wine grape. It arose as a result of the inventors’ grape breeding program to develop commercially viable wine grape varieties to complement non-grape wines produced at their winery.

The grapevine of the present invention was discovered by the inventors among a number of cross combinations in the breeding program. The breeding program produced several test seedlings which were evaluated for their characteristics related to a variety of considerations including, but not limited to, hardiness, vigor, disease resistance, and commercial potential as a wine grape variety. The grapevine was discovered in a controlled cross of the grape ‘St. Pepin’ (U.S. Plant Pat. No. 5,771), which was the female parent, and the grape ‘LaCrosse’ (U.S. Plant Pat. No. 5,588), which was the male parent. The inventors have identified the present variety as ‘KP 92’ and selected the name ‘Nicollet’ therefor. Grapes produced from the ‘Nicollet’ vine have an intense fruit forward flavor and high sugars balanced with increased acidity, which can result in white wines with intense tropical aromas and flavors.

The inventors have asexually reproduced the present variety in Chisago City, Minn. by means of cuttings, and have carefully observed the variety for approximately 6 years. The following data pertains to vines grown in Chisago City, Minn. Alphanumeric color designations refer to values based on The 2015 R.H.S. Color Chart published by The Royal Horticultural Society, London, England. Many of the descriptors are based on those set forth by the International Board for Plant Genetic Resources in collaboration with the Office Internationale de la Vine et du Vin (OIV) and the International Union for the Protection of New Varieties of Plants.

When dimensions, sizes, colors and other characteristics are given, it is to be understood that such characteristics are approximations set forth as accurately as possible. Variations of the usual magnitude incident to climatic factors, fertilization, pruning, pest control and other cultural practices are to be expected. Botanical Classification: Cultivar of *Vitis* with ancestry tracing to several species including *V. labrusca* and *V. riparia*. Parentage: 'St. Pepin' (female), 'LaCrosse' (male).

Plants of 'Nicollet' are stable and reproduced true to type in successive generations. 'Nicollet' has perfect flowers containing extended stamens with anthers having viable pollen. When ripe, the berries of 'Nicollet' are yellow green in color 144A.

The present invention has been shown to be winter hardy to at least -40 degrees F. (-40 degrees C.) in Chisago City, Minn. By way of comparison, the grapevine 'Nicollet' is slightly more winter hardy than its female parent, 'St. Pepin', which is hardy to about -32 degrees F. (about -35.6 degrees C.). By contrast, 'Nicollet' is much more winter hardy than its male parent, 'LaCrosse', which is hardy to about -25 degrees F. (about -32 degrees C.). The values presented below are means (with ranges in parentheses) from vines observed during the 2018 growing season. Vine:

Size and vigor.—Size. — Vines are large and grow best in rows with 8 feet (about 2.4 meters) of spacing between vines. Vigor. — Vigorous — new vines propagated from cuttings were established in a greenhouse on Mar. 3, 2017 and transplanted to a new vineyard located in Chisago City, Minn. on May 17, 2017. Over 80% of the new vines grew at least 4 feet (about 1.2 meters) by Sep. 1, 2017. The inventors have also found it beneficial to train the vine to grow only a single trunk to reduce crowding due to plant vigor in a given growing season.

Productive capacity.—In vineyards located in Chisago City, Minn., 'Nicollet' vines in experimental plots have consistently produced 9.90 Kg/vine or the equivalent of 6.5 tons of ripe fruit per acre. Canes. — Canes are medium length 4' (about 122 cm) to 8' (about 244 cm). Color of canes. — Brown; 175A, 175B, 175C. Thickness of canes. — Medium. Average width at node is 0.5 inch (about 15.2 cm). Diameter at base. — 3.1 inches (about 7.9 cm) to 4.7 inches (about 11.9 cm). Diameter at midpoint. — 1.9 inch (about 4.8 cm) to 3.5 inch (about 8.9 cm). Typical observed internode cane length 4" (about 10.2 cm) to 12" (about 30.5 cm). Cane surface texture. — Smooth (both mature and immature canes). Shoots. — Length of shoots: medium to long, approximately 5.9 inches (about 14.9 cm). Internode length: approximately 3 inches (about 76 mm). Width at node — approximately 0.5 inches (12.7 mm). Shape — predominately circular. Diameter — approximately 9 mm. Contour — smooth. Color of shoots 144A, 144B, yellow-green. Growing tip. — Generally hang over wires. Tendrils. — Length of tendrils: 4 inches (10.16 mm) to 7 inches (17.78 mm). Texture of tendrils: smooth. Color of tendrils 166A, 166C. Typical and observed tendril diameter: 1 mm to 4 mm. Typical and observed tendril shape: round. Buds. — Shape of buds: pointed. Size of buds: medium, approximately 4 mm times 5 mm. Position of buds — markedly held out at approxi-

mately 45 degree angle. Cane bud fruitfulness — basal most fruitful. Bud color: 166B. Bud break: near Chisago City, Minn., bud break is during the middle of May. Trunk. — Bark texture — moderately flaky, small vertical segments approximately 0.40 cm times 6.0 cm. Bark color: striated, 174C and 174D. Leaves: Ten representative mature leaves from different vines were examined during the 2017 and 2018 growing seasons. The leaves were pressed and dried for later analysis. The values presented below are ranges from collections during August of each year. Length of mature leaf. — 4 inches (101.6 mm) to 5.6 inches (142.2 mm). Width of mature leaf. — 3.5 inches (88.9 mm) to 5.9 inches (148.6 mm). Leaves. — Shape. — Cordiform (heart shaped); inferior lateral sinuses and superior lateral sinuses deep with an approximate 1:1 length to width ratio. Apex. — Pointed. Base. — Rounded. Number of lobes. — 3. Anthocyanin coloration of main veins on the upper side of the blade. — Very weak — red 59C. Mature leaf profile. — Flat. Blistering surface of blade upper surface. — Absent. Leaf blade tip. — In the plane of the leaf. Margins. — Serrate with irregular teeth. Height of teeth on margin (average). — 0.31 cm (ranges from 0.2 cm to 0.9 cm; height/width ratio is approximately 0.25 (ranges from 0.10 to 0.43). Shape of teeth on margin. — Wide teeth with convex sides. Texture (mature leaf). — Upper surface: Smooth to slightly bullate; glabrous. Lower surface: Smooth; almost glabrous with sparse short hairs on veins. General shape of petiole sinus. — Slightly open. Tooth at petiole sinus. — Absent. Petiole sinus limited by veins. — Absent. Shape of upper lateral sinus. — Lobes slightly overlapping. On mature leaf, petiole sinus is 1.47 inches (3.7 cm) long and 0.52 inches (1.3 cm) wide at widest point. Autumn coloration of leaves. — green 137A on upper leaf surface, near yellow-green 146B on lower leaf surface. Coloration is slow to develop. Normally frost kills leaves before extensive color change. Texture of upper surface of leaf. — Smooth. Texture of lower surface of leaf. — Rough. Length of petiole. — 4 inches (101.6 mm) to 5 inches (127 mm). Shape of petiole. — Mostly round. Diameter of petiole. — 3.1 mm. Color of petiole. — 144D. Color of adaxial leaf surface. — 146A, 146B, yellow-green leaf surface. Color of abaxial leaf surface. — 146C, yellow-green leaf surface. Pubescence very sparse on main veins abaxial surface and at petiolar junction. Color of leaf veins. — About 146A on upper surface, about 146B, yellow-green on lower surface. Flowers: Flower sex. — Hermaphrodite. Fragrance. — Moderately fragrant. Date of bloom. — Late May when grown in Chisago City, Minn. Date of full bloom. — Early June when grown in Chisago City, Minn. Type. — Fertile, based on use in controlled crosses. Amount of pollen. — Abundant. Color of pollen. — 4B, yellow. Petals are ovoid in shape, cohering at summit and separating at base. — 2.5 mm long; 1 mm wide at fused end; reflexed after dehiscence. Flower petals are typically five in number, and open from the bottom to the top and remain entire after separation. Apex of petals is concave. Base is smooth and about 2.4 mm in circumference. Margins are smooth and convexly curved. Shape of cluster. — Slightly cone

shaped. Average floral cluster length. — 6.5 inches (16.5 cm). Average floral cluster diameter. — 4.0 inches (10.2 cm). The values presented below are means (with ranges in parentheses) from vines observed during the 2018 growing season. Number of flowers per cluster 88 (60-112). Size of individual flower. — 5.2 mm long, 3.9 mm wide. Color of stamen. — Anther: 162C, grayed yellow. Color of filament. — 155A, white. Number of stamen. — 5.0 (4-6). Number of pistil. — 1 per flower. Length of pistil. — 2.4 mm. Color on upper surface of petal. — 145A, yellow-green. Color on lower surface of petal. — 149D, light green. Sepals. — Five in number, and generally very poorly developed. Color of sepal. — 144A, yellow-green (both surfaces). Color of pistil. — 144A, yellow-green. Cluster peduncles. — Length 1.2 inches (3 cm) to 3.5 inches (9 cm), diameter 0.8 inches (2.0 cm) to 2.4 inches (6.0 cm). Cluster peduncle color. — 141A, light green. Texture of peduncles. — Smooth, glabrous. Fruit: Maturity. — Ripe for commercial harvesting and wine approximately early September near Chisago City in east central Minnesota. Solids. — Sugar: medium brix (18.2% to 24.7%). Juice pH. — (3.17-3.42). Percent titratable acidity. — (0.65-0.92%). The values presented below are means (with ranges in parentheses) from fruit observed in the 2018 growing season. Seeds. — Seeds: 2-4 seeds per berry. Seed length: 0.55 mm (0.50-0.55) to 0.63 mm (0.54-0.65). Seed width: 0.33 mm (0.31-0.36) to 0.39 mm (0.35-0.46). Seed weight: 0.020 g. to 0.033 g. Seed Color: 165A, 177A. Clusters. — Generally medium-sized clusters weighing 0.4 pounds (about 181 grams) to 0.8 pound (about 363 grams). Clusters are tight and form a conical shouldered cluster. Size of cluster. — 9.8 cm long (7.3-13.7); 4.9 cm wide (3.4-6.6). Between 45 and 65 berries are included in a typical cluster. Clusters per plant. — 12.5. Clusters per shoot. — 2-3 clusters per shoot. Pedicel length ranges from 0.32 inches (8.0 mm) to 0.52 inches (13.0 mm). Pedicel diameter ranges from 0.06 inches (1.5 mm) to 0.1 inches (2.5 mm) at mid-pedicel. Pedicel texture — smooth, glabrous. Pedicel

color — grayed-yellow 162A. The berry attachment is very strong. Almost no shatter occurs at full maturity. Berries. — Berry size is medium-large and berry form is uniform. For example, the dimension of berries along the longitudinal axis is 0.5132 inch (about 13 mm) to 0.75 inch (19.1 mm). The dimensions of berries along the transverse axis is 0.6 inch (15.24 mm) to 0.82 inch (about 21 mm). Berry weight. — 0.08 ounces (about 2.3 grams) to 0.19 ounces (about 5.4 grams). Form. — round. Skin thickness. — Medium. Firmness. — Firm. Tendency to split. — None. Color. — yellow green 144A and yellow green 144B. Flavor. — Sweet crisp with notes of pineapple, peach and mango. Eating quality. — Good. Use. — Wine, juice. Shipping and handling qualities. — Excellent. Keeping quality. — After two months in cold storage, still in good appearance. Vineyard performance: Based on observations compiled over 4 years (2015-2018). Susceptibility to powdery mildew (*Uncinula necator*). — Low. Susceptibility to downy mildew (*Plasmopara viticola*). — Moderate. Susceptibility to black rot (*Guignardia bidwellii*). — Low. Susceptibility to foliar phylloxera (*Daktulospahira vitifoliae*). — Moderate. Susceptibility to crown gall (*Agrobacterium*). — No natural infection observed. Susceptibility to phenoxy herbicide drift — Low. Winter hardiness. — Trunks have survived -40.degree. F. (-40.degree. C.). Wood ripening. — Good. Wine quality: Descriptions below are compiled from observations on wine made from 'Nicollet' fruit harvested during the 2016-2017 growing seasons. 1. Flavors and aromas: pineapple, peach and mango; no herbaceous aroma or very slight *V. labrusca* aroma. 2. Balance: light body, well balanced when finished dry or with residual sugar. 3. Berry Skin Color: attractive yellow green 144A and 144B. 4. Propensity for oxidation: low. 5. Overall quality: excellent. 6. Berry Flesh Color 144C.

The invention claimed is:

1. A new and distinct variety of grapevine plant designated 'Nicollet' as illustrated and described herein.

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FIG. 1

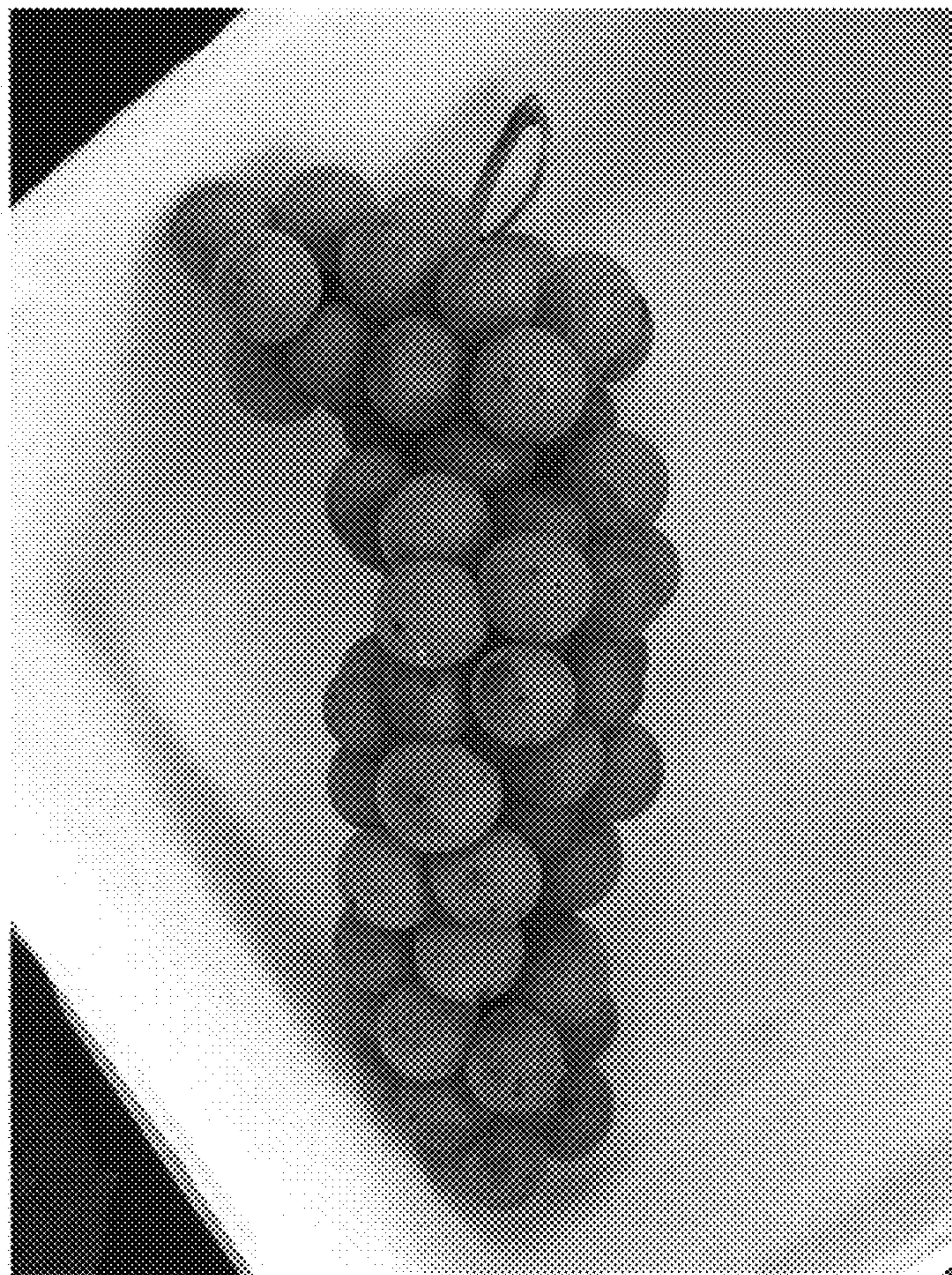


FIG. 2

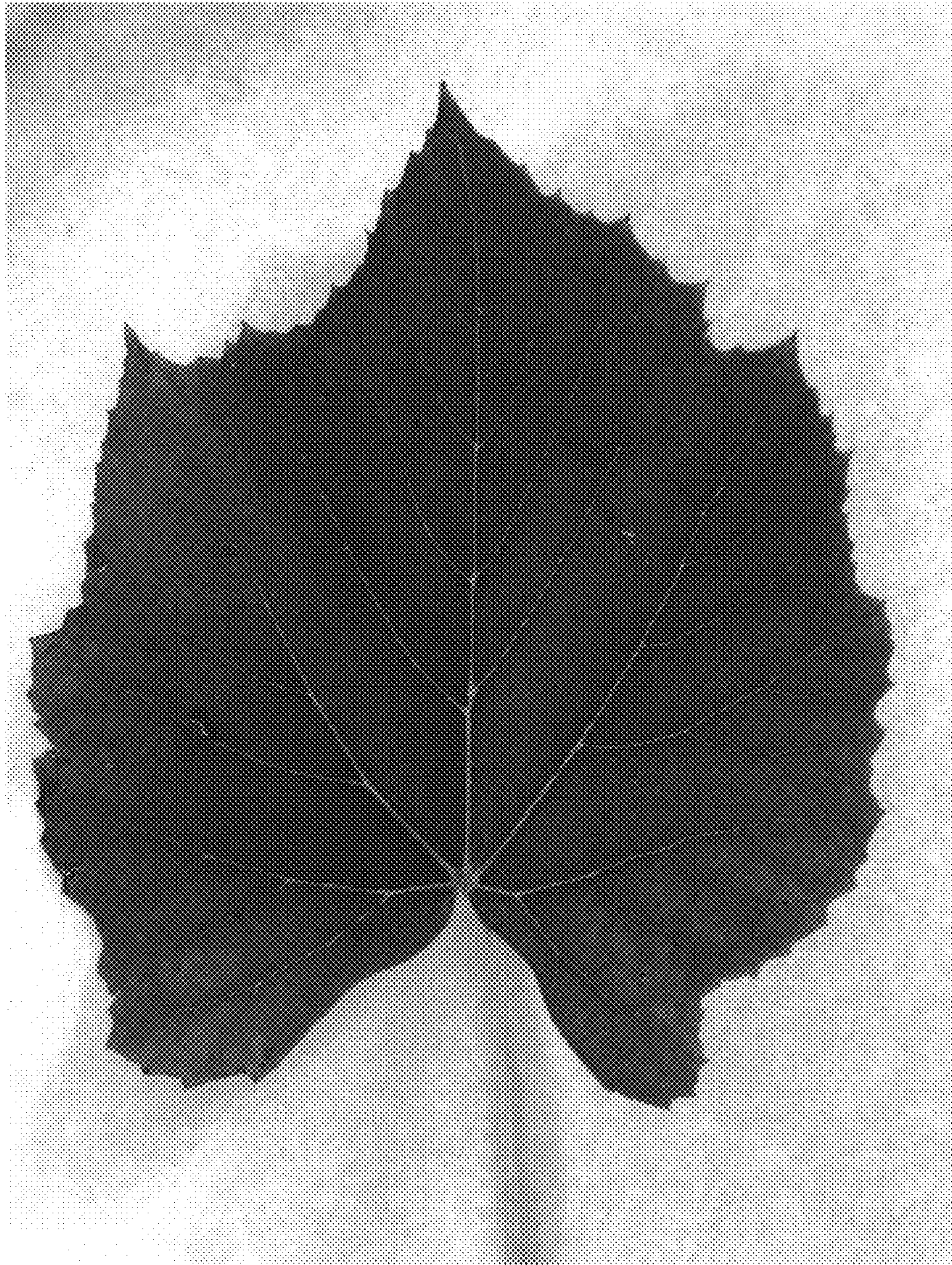


FIG. 3



FIG. 4



FIG. 5



FIG. 6

